POWER DOOR LOCK CONTROL SYSTEM

730B4–01

ON–VEHICLE INSPECTION

1. INSPECT FOR ELECTRICAL DOOR LOCK OPERATION

HINT:

- w/ Power window:
  The door control switch is built in the master switch in the driver's door and also in the passenger's door.
- w/o Power window:
  The door control switch is in the driver's door and also in the passenger's door.

(a) Check the basic function.

(1) Check that all the doors will lock when the door control switch (for manual operation) is turned to the lock side and all the doors will unlock when turned to the unlock side.

(2) Check that all the doors will lock when the driver's door lock key cylinder is turned to the lock side with the key.

(3) Check that all the doors will lock when the passenger's door lock key cylinder is turned to the lock side with the key.

(4) Check that only the driver's door will unlock when the driver's door lock key cylinder is turned to the unlock side and all the doors will unlock when turned to the unlock side once again within 3 seconds from the first unlocking operation, with the key (2–step unlocking function).

HINT:

The 2–step unlocking function is applicable to the driver's door lock key cylinder only.

(5) Check that all the doors will unlock when the passenger's door lock key cylinder is turned to the unlock side once with the key.

(b) Check the key confinement prevention function.

NOTICE:

In order to prevent the key from being confined, the inspection should be performed with the driver's door glass open.

(1) Insert the ignition key into the ignition key cylinder.

(2) With the driver's door open, check all the doors will immediately unlock when the door lock knob for the driver's door is turned to the lock side.

(3) With the driver's door open, check all the doors will immediately unlock when the door control switch (for manual operation) is turned to the lock side.

(4) With the driver's door open, lock the driver's door by holding the driver's door lock knob in the lock side for 2 seconds or more, and then close the driver's door. At this time, check that all the doors will unlock.

(c) Check the security function.

(1) Close all the doors with the driver's door glass open so that the door control switch (for manual operation) can be operated from the outside of the vehicle.

(2) Pull out the ignition key, open the driver's door, and close and lock the door with the door control switch (for manual operation). Under this condition, check that all the doors will not unlock when the door control switch (for manual operation) is turned to the unlock side from the outside of the vehicle.

(3) Pull out the ignition key, close and lock the driver's door by the key operation. Under this condition, check that all the doors will not unlock when the door control switch (for manual operation) is turned to the unlock side from the outside of the vehicle.

(4) Pull out the ignition key, close the driver's door and lock the door by the wireless door lock operation. Under this condition, check that all the doors will not unlock when the door control switch (for manual operation) is turned to the unlock side from the outside of the vehicle.

(5) Check that the security function will cancel when either of the following conditions is satisfied.
- The ignition switch turned ON
- The driver's door unlocked by the key operation
- The door control switch (for manual operation) turned to the unlock side after unlocking the door control knob manually
- The doors unlocked by the wireless operation (for wireless door lock models)

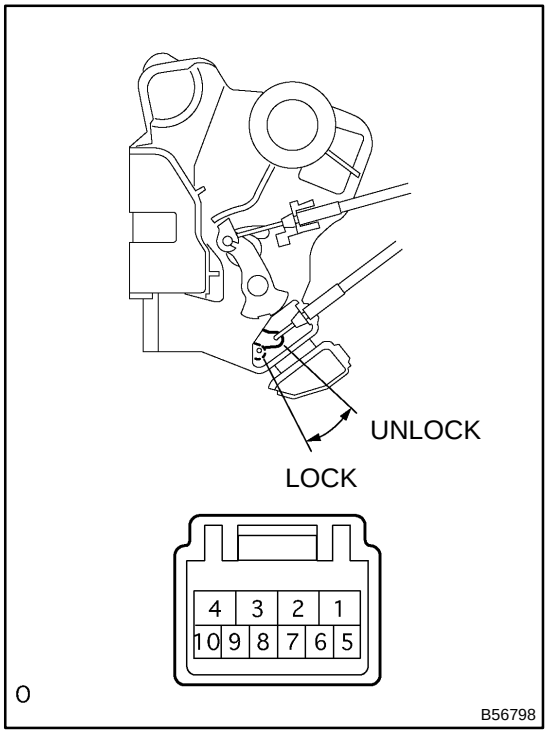
(d) Check the illuminated entry function.

(1) Check that the room light, ignition switch light and rear room light will light up when opening any of the doors and fade out in 15 seconds after closing the door.

(2) Check that the room light, ignition switch light and rear room light will fade out immediately when either of the following conditions is satisfied.
- All the doors closed and locked
- All the doors closed and the ignition switch turned ON or ACC

730B5–01

INSPECTION



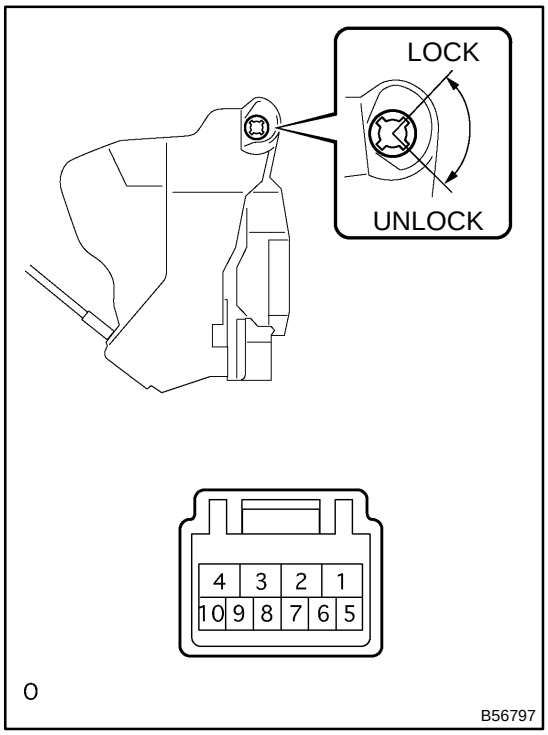
1. INSPECT DRIVER'S DOOR LOCK

(a) Inspect the door lock motor operation.

Standard:

Measuring condition	Operation
Battery positive (+) Terminal – 4 Battery negative (–) Terminal – 1	Lock
Battery positive (+) Terminal – 1 Battery negative (–) Terminal – 4	Unlock

If the result is not as specified, replace the door lock assembly.



(b) Inspect the door lock and unlock switch continuity.

Standard:

Door lock position	Terminal No.	Specified condition
Lock	7 ⇔ 9	Continuity
OFF	–	–
Unlock	7 ⇔ 10	Continuity

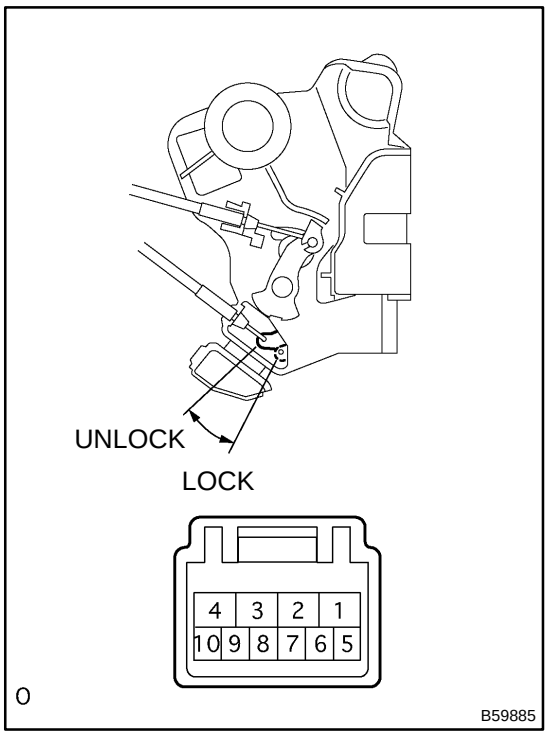
If the result is not as specified, replace the door lock assembly.

(c) Inspect the position switch continuity.

Standard:

Door lock position	Terminal No.	Specified condition
Lock	7 ⇔ 8	No continuity
OFF	–	–
Unlock	7 ⇔ 8	Continuity

If the result is not as specified, replace the door lock assembly.



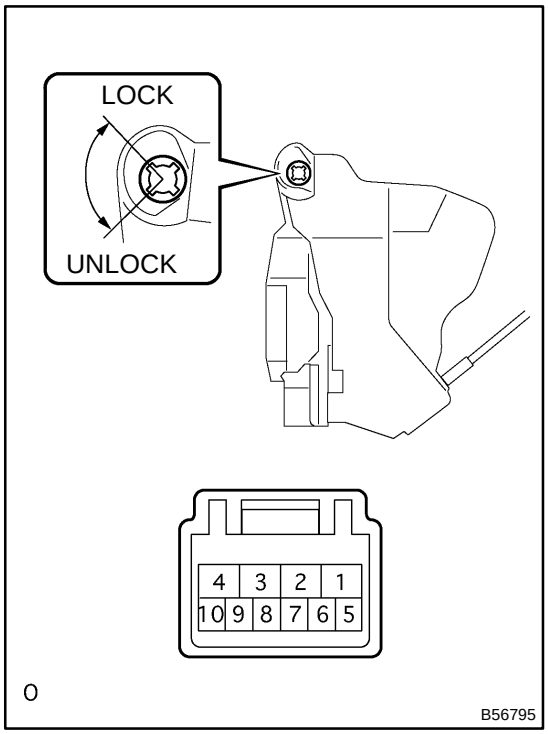
2. INSPECT PASSENGER'S DOOR LOCK

(a) Inspect the door lock motor operation.

Standard:

Measuring condition	Operation
Battery positive (+) Terminal – 4 Battery negative (–) Terminal – 1	Lock
Battery positive (+) Terminal – 1 Battery negative (–) Terminal – 4	Unlock

If the result is not as specified, replace the door lock assembly.



(b) Inspect the door lock and unlock switch continuity.

Standard:

Door lock position	Terminal No.	Specified condition
Lock	6 ⇔ 8	Continuity
OFF	–	–
Unlock	5 ⇔ 8	Continuity

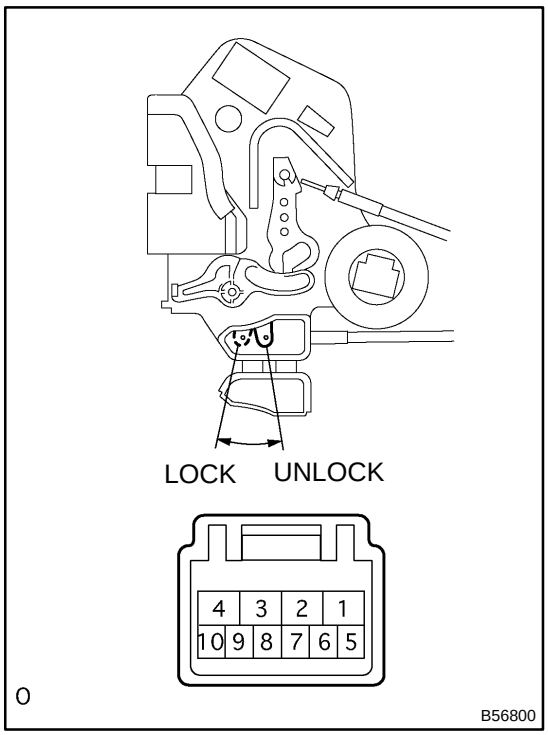
If the result is not as specified, replace the door lock assembly.

(c) Inspect the position switch continuity.

Standard:

Door lock position	Terminal No.	Specified condition
Lock	7 ⇔ 8	No continuity
OFF	–	–
Unlock	7 ⇔ 8	Continuity

If the result is not as specified, replace the door lock assembly.



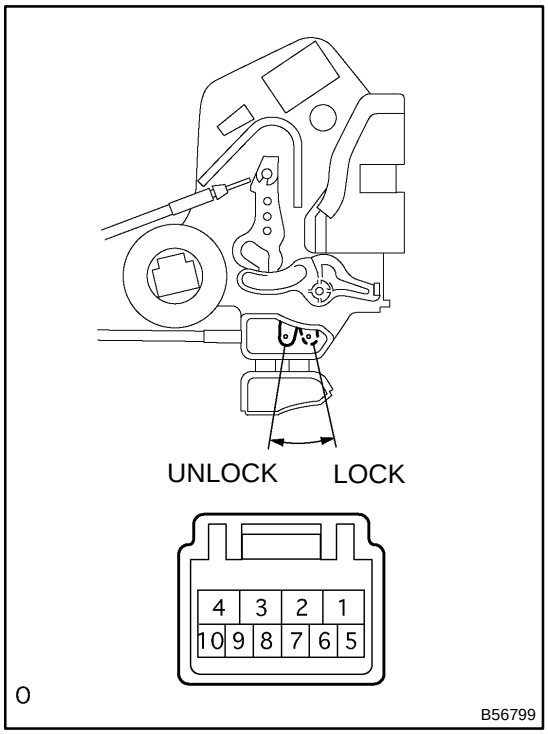
3. INSPECT REAR DOOR LOCK LH

(a) Inspect the door lock motor operation.

Standard:

Measuring condition	Operation
Battery positive (+) Terminal – 4 Battery negative (–) Terminal – 1	Lock
Battery positive (+) Terminal – 1 Battery negative (–) Terminal – 4	Unlock

If the result is not as specified, replace the door lock assembly.



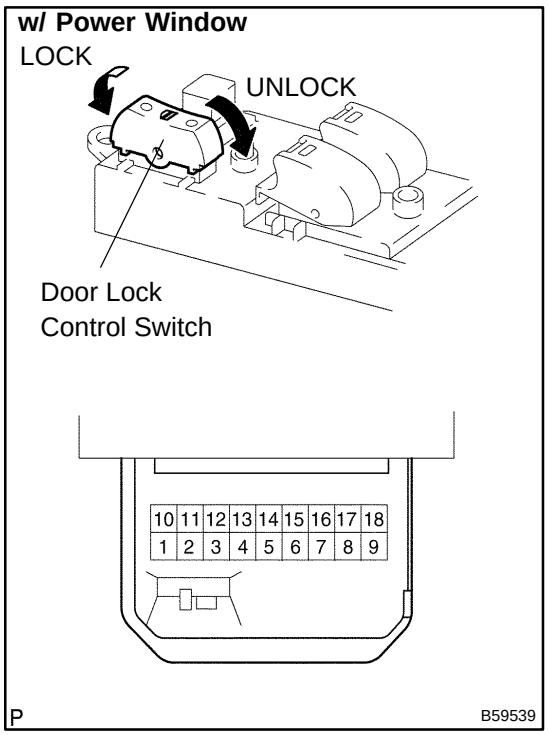
4. INSPECT REAR DOOR LOCK RH

(a) Inspect the door lock motor operation.

Standard:

Measuring condition	Operation
Battery positive (+) Terminal – 4 Battery negative (–) Terminal – 1	Lock
Battery positive (+) Terminal – 1 Battery negative (–) Terminal – 4	Unlock

If the result is not as specified, replace the door lock assembly.



5. INSPECT POWER WINDOW REGULATOR MASTER SWITCH ASSY

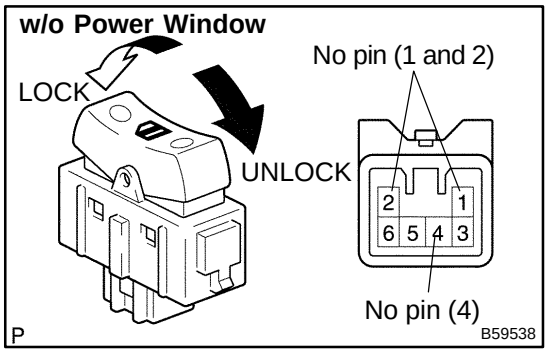
(a) w/ Power window:

Inspect the door lock control switch continuity.

Standard:

Switch position	Terminal No.	Specified condition
Lock	1 ⇔ 3 ⇔ 5	Continuity
OFF	–	No continuity
Unlock	1 ⇔ 3 ⇔ 8	Continuity

If the result is not as specified, replace the switch.



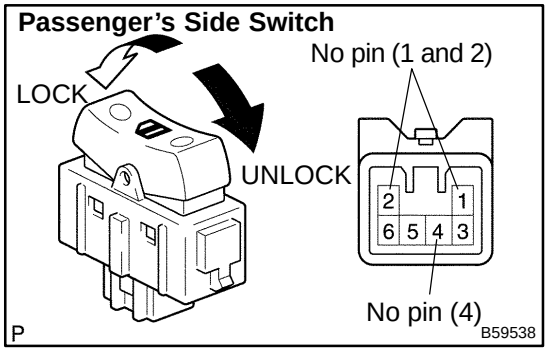
(b) w/o Power window:

Inspect the door lock control switch continuity.

Standard:

Switch position	Terminal No.	Specified condition
Lock	3 ⇔ 6	Continuity
OFF	–	No continuity
Unlock	3 ⇔ 5	Continuity

If the result is not as specified, replace the switch.



6. INSPECT DOOR CONTROL SWITCH ASSY

(a) Passenger's side switch:

Inspect the door lock control switch continuity.

Standard:

Switch position	Tester connection	Specified condition
Lock	3 ⇔ 6	Continuity
OFF	–	No continuity
Unlock	3 ⇔ 5	Continuity

If the result is not as specified, replace the switch.

WIRELESS DOOR LOCK CONTROL SYSTEM

730B0–02

PRECAUTION

1. NOTICES WHEN CHECKING

(a) Power door LOCK/UNLOCK function:

The wireless remote control function operates only when the following 3 conditions are met.

(1) No key is inserted into the ignition key cylinder.

(2) All the doors are closed. However, doors can be unlocked even when any of the doors is opened.

(3) The power door lock system operates normally.

HINT:

- The UNLOCK function operates even when a door is open.
- The UNLOCK function operates even when the key is inserted into the ignition key cylinder, however it must be in the OFF position.

(b) Remote panic function:

The wireless remote control function operates only when the following condition is met.

(1) The ignition switch is OFF.

HINT:

The key can be inserted, however it must be in the OFF position.

(c) The wireless door lock remote control operational area differs depending on the situation.

(1) The operational area differs depending on the operators and the ways the transmitter is held.

(2) In certain areas, the remote control function will only operate partially for the operational area will be reduced due to the vehicle body shape and the influence of the surrounding environment.

(3) Since the transmitter uses faint electric waves, strong electric waves or noise in the frequency used may reduce the operational area or the remote control may not function.

(4) When the battery weakens, the operational area is reduced or the remote control may not function.

HINT:

If the door control transmitter has been left in a place that is exposed to direct sunlight, such as on the instrument panel, it may cause the battery to weaken or cause other such problems.

730B1–02

ON–VEHICLE INSPECTION

1. INSPECT WIRELESS DOOR LOCK CONTROL FUNCTIONS

HINT:

- The switch described in this text is a switch for transmitting signals (LOCK switch, UNLOCK switch and PANIC switch) which is built into the door control transmitter.
- All the functions listed below must be checked in the remote control operational area.

(a) Put the vehicle under the conditions that allow the wireless control function to be operated (See PRECAUTION on page 73–7).

(b) Check the basic function.
  (1) Check that all the doors lock when the LOCK switch is pressed.
  (2) Check that only the driver side door unlocks when the UNLOCK switch is pressed once and the other doors unlock when the UNLOCK switch is pressed again within 3 seconds.

(c) Check the chattering prevention function.
  (1) Check that the corresponding operation occurs only once and is not repeated continuously while the switch is held. However, when the switch is operated repeatedly at 1 second intervals, check that the corresponding operation is carried out.

(d) Check the automatic lock function.
  (1) Check that all the doors lock automatically as long as none of them have been opened or all the doors have not been locked within approx. 30 seconds after they are unlocked by pressing the UNLOCK switch.
  (2) Check that the automatic locking function does not operate when any door has been opened or all of them have been locked within approx. 30 seconds after they are unlocked by pressing the UNLOCK switch.

(e) Check the switch operation fail–safe function.
  (1) Check that the doors can not be locked using the switch while the key is in the ignition key cylinder. However, this does not apply when the system is in the recognition code registration mode.

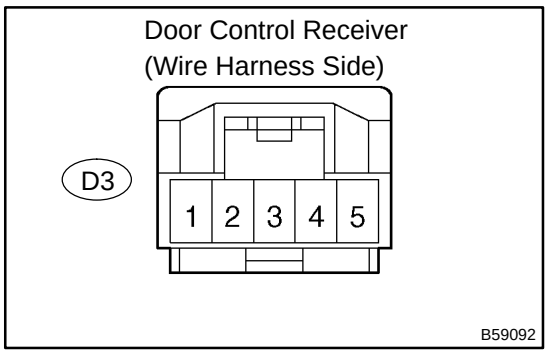
(f) Check the operation stop function when a door is open or not completely closed.
  (1) Check that the doors are not locked by the switch while any door is open or not completely closed. However, the glass hatch open operation is possible in this situation.

(g) Check the repeat function.
  (1) Check that all the doors attempt to automatically lock once again 1 second after the LOCK switch has been pressed while the movement of the driver side door control knob is being restricted while in the unlocked position.

(h) Check the hazard warning lamps flashing functions (answer–back).
  (1) When the LOCK switch is pressed, check that the lamps flash once with the locking of all the doors.
  (2) When the UNLOCK switch is pressed once, check that the lamps flash twice with the unlocking of the driver side door.
  (3) When the UNLOCK switch is pressed again within 3 seconds, check that the lamps flash twice with the unlocking of all the doors.

(i) Check the remote panic alarm function.
  (1) Check that the horn sounds, and the headlamps, the taillamps and the hazard warning lamps flash for 60 seconds by the theft alarm function when the PANIC switch is pressed. Also, check that the horn stops sounding and the lamps stop flashing when either switch of the transmitter is pressed once again.

(j) Check the illuminated entry function.
  (1) When all the doors are locked, pressing the UNLOCK switch causes the room lamp (when the lamp switch is in the DOOR position) to illuminate simultaneously with the unlock operation.
  (2) Check that the room lamp goes off in approx. 15 seconds if doors have not been opened.



2. CHECK DOOR CONTROL RECEIVER

(a) Disconnect the D3 connector from the door control receiver.

(b) Check the continuity and voltage between the terminals of the door control receiver connector and the body ground, as shown in the illustration and table.

Standard:

Symbols (Terminal No.)	Specified condition
+B (D3– 5) – Body ground	10 – 14 V
GND (D3–1) – Body ground	Continuity

If the result is not as specified, there may be a malfunction on the wire harness side.

(c) Reconnect the connector and check the voltage between the terminal and body ground.

Standard:

Symbols (Terminal No.)	Condition	Specified Condition
RDA (D3–2) – Body ground	No key in ignition key cylinder, all doors closed and each transmitter switch OFF → ON	1 V or less → Approx. 6 – 7 V → 1 V or less

If the result is not as specified, the receiver may have a malfunction.

TRANSMITTER BATTERY

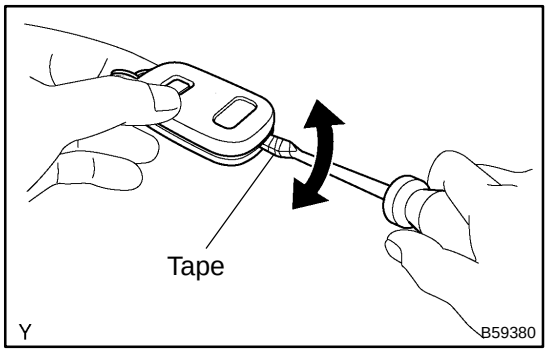
730B2–01

REPLACEMENT

1. REPLACE TRANSMITTER BATTERY

NOTICE:

Special caution should be taken for handling each component as they are precision electronic components.



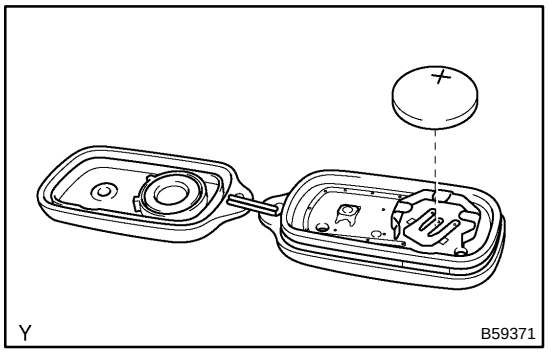
(a) Using a screwdriver, pry out the transmitter case.

NOTICE:

Do not forcibly pry out the case.

HINT:

Tape the screwdriver tip before use.



(b) Remove the battery (lithium battery).

NOTICE:

- **Do not push the terminals with your finger.**
- **Prying up the battery (lithium battery) to forcibly remove it will cause deformation of the terminals.**
- **Do not touch the battery with wet hands. Water may cause unexpected rust.**
- **Do not touch or move any components inside the transmitter as it may interfere with proper operation.**

2. INSTALL TRANSMITTER BATTERY

(a) Install a new battery (lithium battery) with the positive (+) side up, as shown in the illustration.

NOTICE:

- **Be sure that the positive side and the negative side of the transmitter battery are matched–up correctly.**
- **Be careful not to bend the electrode of the transmitter battery insertion.**
- **Be careful that dust or oil does not adhere to the transmitter case.**

(b) Install the case securely.

DOOR CONTROL TRANSMITTER

730B3–03

REGISTRATION

1. REGISTRATION OF RECOGNITION CODE

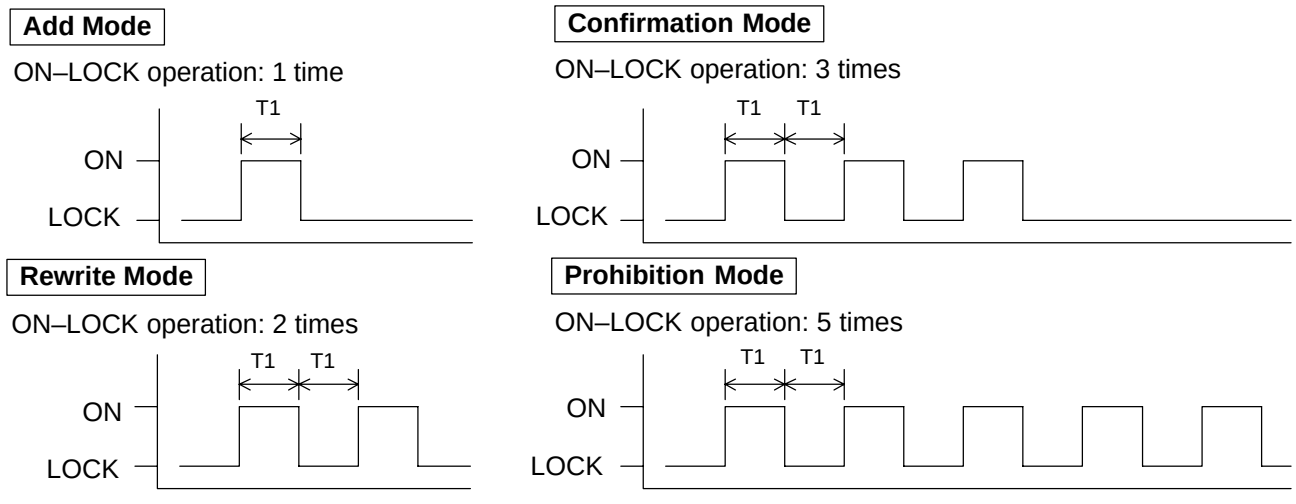
HINT:

- The add mode is used to retain the already registered codes while registering a new recognition code. This mode is used when adding a transmitter. If the number of the registered codes exceeds 4, the previously registered code will be correspondingly erased in order, starting from the first registered code.
- The rewrite mode is used to erase all the previously registered codes and register only new recognition codes. This mode is used when exchanging the transmitter or the door control receiver for new one.
- The prohibition mode is used to erase all the registered codes and cancel the wireless door lock function. Use this mode when the transmitter is lost.
- The confirmation mode is to confirm how many recognition codes have already been registered before an additional registration of a recognition code.
- All the following registration procedures must be performed in order continuously.

(a) The vehicle should be in the following conditions.
  (1) The key is not inserted in the ignition key cylinder.
  (2) Driver's door is OPENED. (The other doors are CLOSED)
  (3) Driver's door is UNLOCKED.

(b) Perform the following operations to select the desired mode.
  (1) Insert and remove the key from the ignition switch twice within 5 seconds.
  (2) After the above operations, close and open the driver door twice within 40 seconds. Then insert the key into the ignition key cylinder and remove it.
  (3) After the above operations, close and open the driver door twice within 40 seconds. Then insert the key into the ignition key cylinder and close the door.
  (4) Turn the ignition switch from LOCK to ON and back to LOCK at approximately 1 second interval 1 to 5 times to select a mode (see the table below). Then remove the key from the ignition key cylinder.

Number of ON–LOCK operation of ignition switch:



T1: Approx. 1 sec.

B58899

NOTICE:

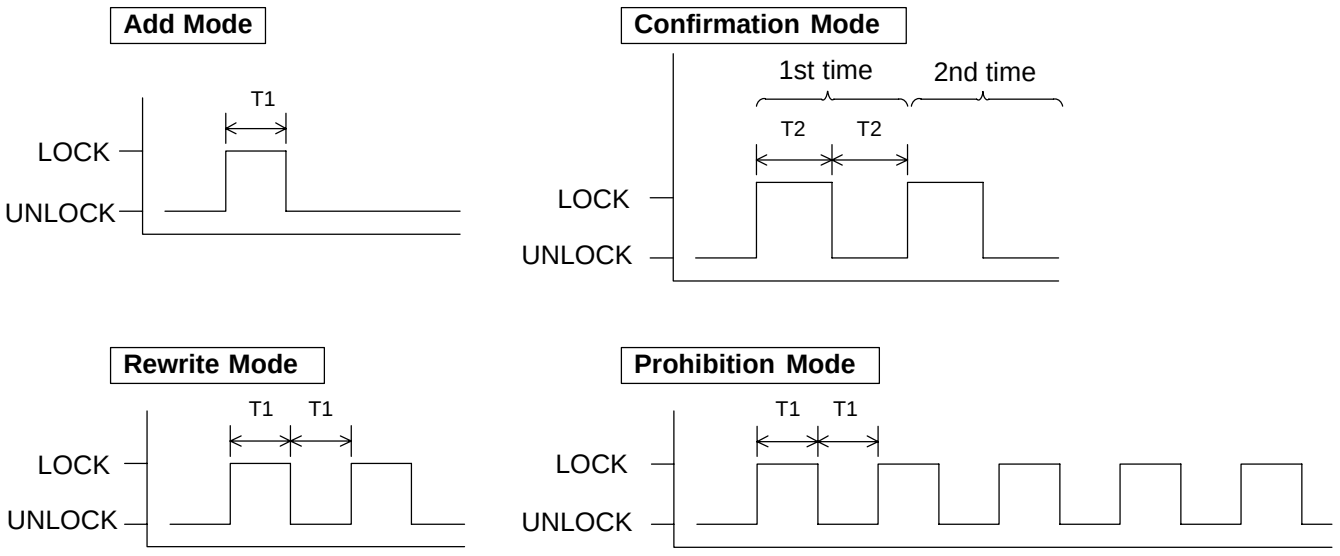
If the number of the ON–LOCK operation of the ignition switch is 0, 4 or 6 or more, there will be no response (power door lock and unlock operation) to inform which mode has been selected.

(5) After selecting a mode, the integration relay automatically performs the power door LOCK–UNLOCK operation within 3 seconds to inform the selected mode (see the table below).

HINT:

- In the confirmation mode, when the operation is performed twice, it directs that 2 types of recognition codes have been registered.
- In the confirmation mode, If the number of the registration code is 0, the LOCK–UNLOCK operation is automatically performed 5 times.
- If the prohibition mode or confirmation mode is selected, registration procedure is completed.

Response of selected mode (Power door lock operation):



T1: Approx. 1 sec.
T2: Approx. 2 sec.

B50827

(c) Register the new recognition codes (Add mode or Rewrite mode):

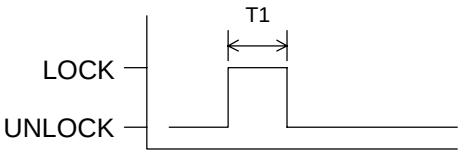
(1) Within 40 seconds after the add mode or the rewrite mode has been selected, press the LOCK and UNLOCK switches on the transmitter switch simultaneously for 1.0 – 1.5 seconds.
Within 3 seconds after the previous operation, press either one of the switches for more than 1.0 seconds.

(2) Within 3 seconds after the transmitter switch has been turned OFF, the LOCK–UNLOCK operation will be automatically performed once if the registration of the recognition code of the transmitter is completed correctly. In case the LOCK–UNLOCK operation is performed twice, the registration of recognition code has failed. Perform the registration procedure from the beginning once again.

Response for registration completion:

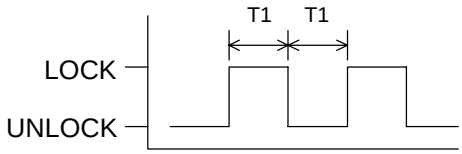
LOCK–UNLOCK Occurs Once

Registration of recognition code has been completed.



LOCK–UNLOCK Occurs Twice

Registration of recognition code has failed.



T1: Approx. 1 sec.

B58900

(3) If the multiple transmitter to be registered, repeat step (c) within 40 seconds after the previous registration.

HINT:

- 4 types of recognition codes can be registered at one time.
- If even one of the following conditions is satisfied, the registration mode will finish.
  - 40 seconds have elapsed while an input of each mode is ready.
  - Any of the doors is opened
  - The key plate is inserted in the ignition key cylinder.
  - 4 types of recognition codes are registered at once.

TOYOTA VEHICLE INTRUSION PROTECTION SYSTEM

730AV–01

ON–VEHICLE INSPECTION

1. OUTLINE OF TOYOTA VEHICLE INTRUSION PROTECTION (TVIP) SYSTEM

HINT:

The theft deterrent system has 2 modes; one is the active mode that is an initially set mode and another is the passive mode that can be switched ON/OFF by the specified method (See step 4).

(a) When the theft deterrent system detects any theft, the system will sound the horns and flash the lights to alert the people around the vehicle to the theft.

HINT:

Each mode (active and passive) has 4 states; disarmed state, arming preparation state, armed state, alarm sounding state.

(1) Disarmed state:
- The user is near the vehicle.
- The alarming function does not operate.
- The theft deterrent function does not operate.

(2) Arming preparation state:
- Time from the user locks a door to leave the vehicle.
- Time for transferring to the armed state.
- The theft deterrent function does not operate.

(3) Armed state:
- The user leaves the vehicle completely.
- The theft deterrent function operates.

(4) Alarm sounding state:

Once a theft is detected in the armed state, the system will sound the horns and flash the lights to alert the people around the vehicle to the theft.

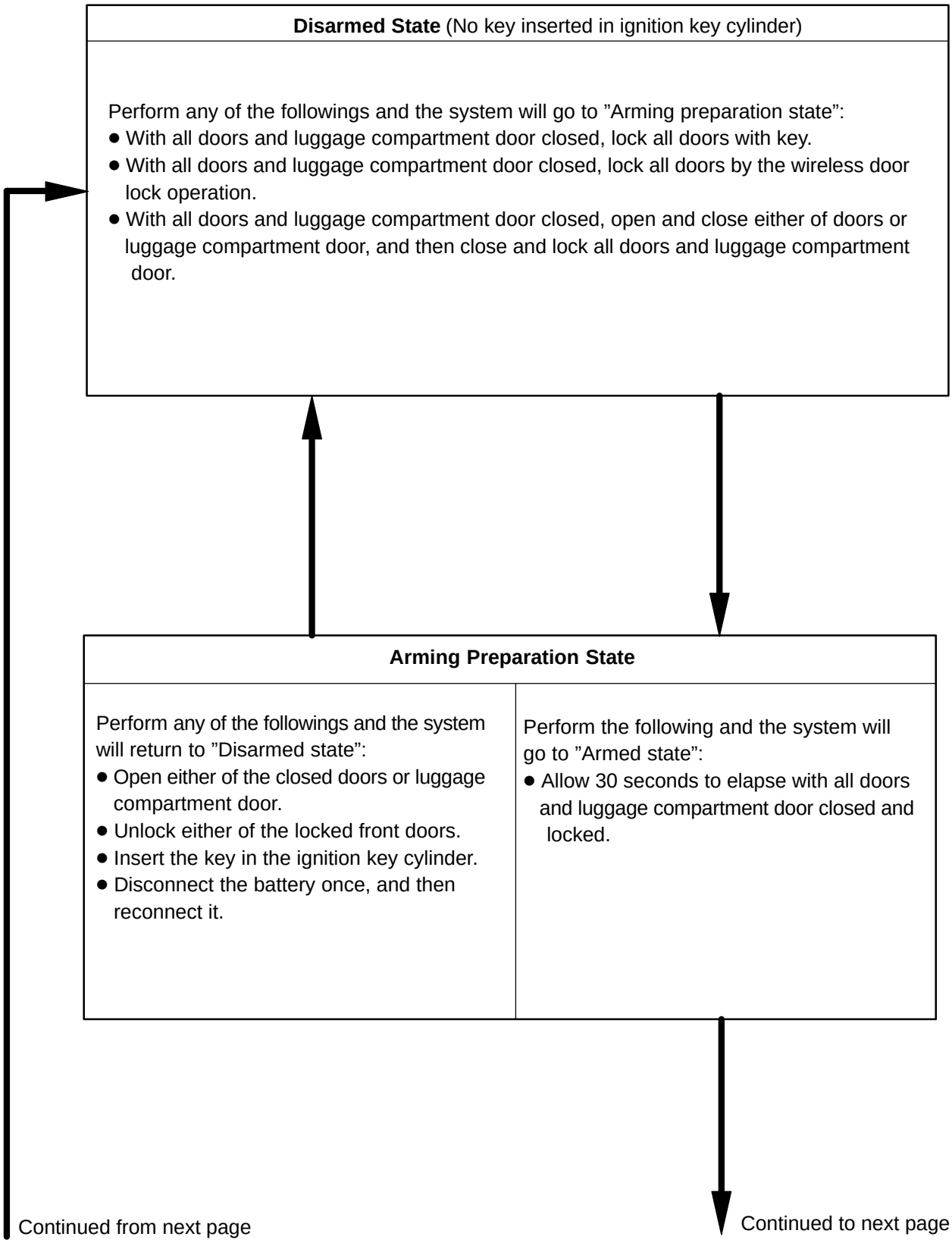
Refer to the table for the alarming method and time.

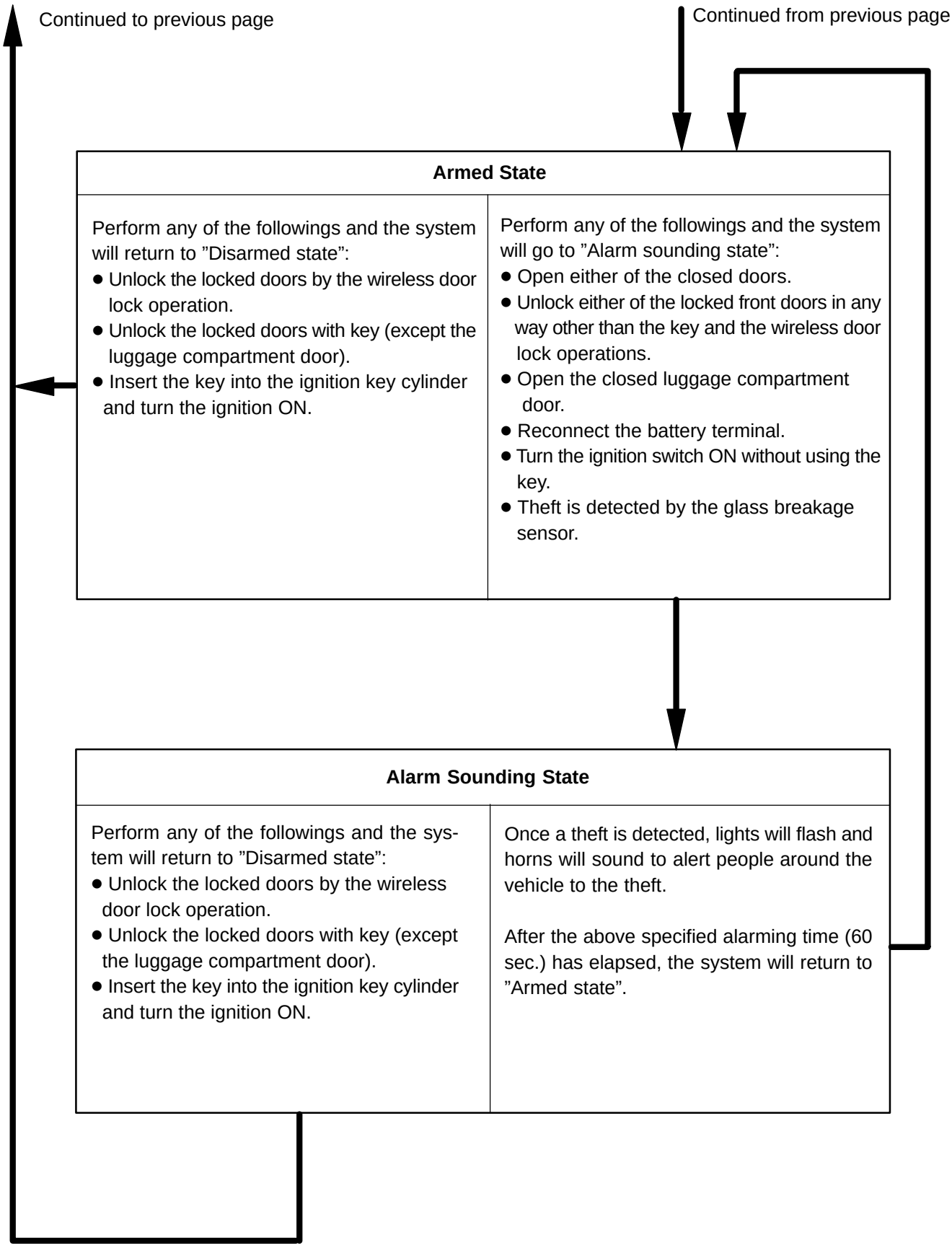
Alarming method	Room Light	Illuminating (turn on)
	Headlight	Flashing at a cycle of approx. 0.4 sec.
	Hazard Warning Light	Flashing at a cycle of flasher relay
	Vehicle Horn	Sounding at a cycle of approx. 0.4 sec.
Alarming time	Approx. 60 sec.	

HINT:

In the alarm sounding state, when either of the front doors is unlocked and no key is inserted in the ignition key cylinder, forced door lock signal is output.

2. ACTIVE ARMING MODE

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Armed State
Perform any of the followings and the system will return to ”Disarmed state”:
● Unlock the locked doors by the wireless door lock operation.
● Unlock the locked doors with key (except the luggage compartment door).
● Insert the key into the ignition key cylinder and turn the ignition ON.
Perform any of the followings and the system will go to ”Alarm sounding state”:
● Open either of the closed doors.
● Unlock either of the locked front doors in any way other than the key and the wireless door lock operations.
● Open the closed luggage compartment door.
● Reconnect the battery terminal.
● Turn the ignition switch ON without using the key.
● Theft is detected by the glass breakage sensor.
Alarm Sounding State
Perform any of the followings and the system will return to ”Disarmed state”:
● Unlock the locked doors by the wireless door lock operation.
● Unlock the locked doors with key (except the luggage compartment door).
● Insert the key into the ignition key cylinder and turn the ignition ON.
Once a theft is detected, lights will flash and horns will sound to alert people around the vehicle to the theft.
After the above specified alarming time (60 sec.) has elapsed, the system will return to ”Armed state”.

Indicator light output:

Condition	Indicator light
Disarmed state	OFF
Arming preparation state	ON
Armed state	BLINK
Alarm sounding state	ON

HINT:

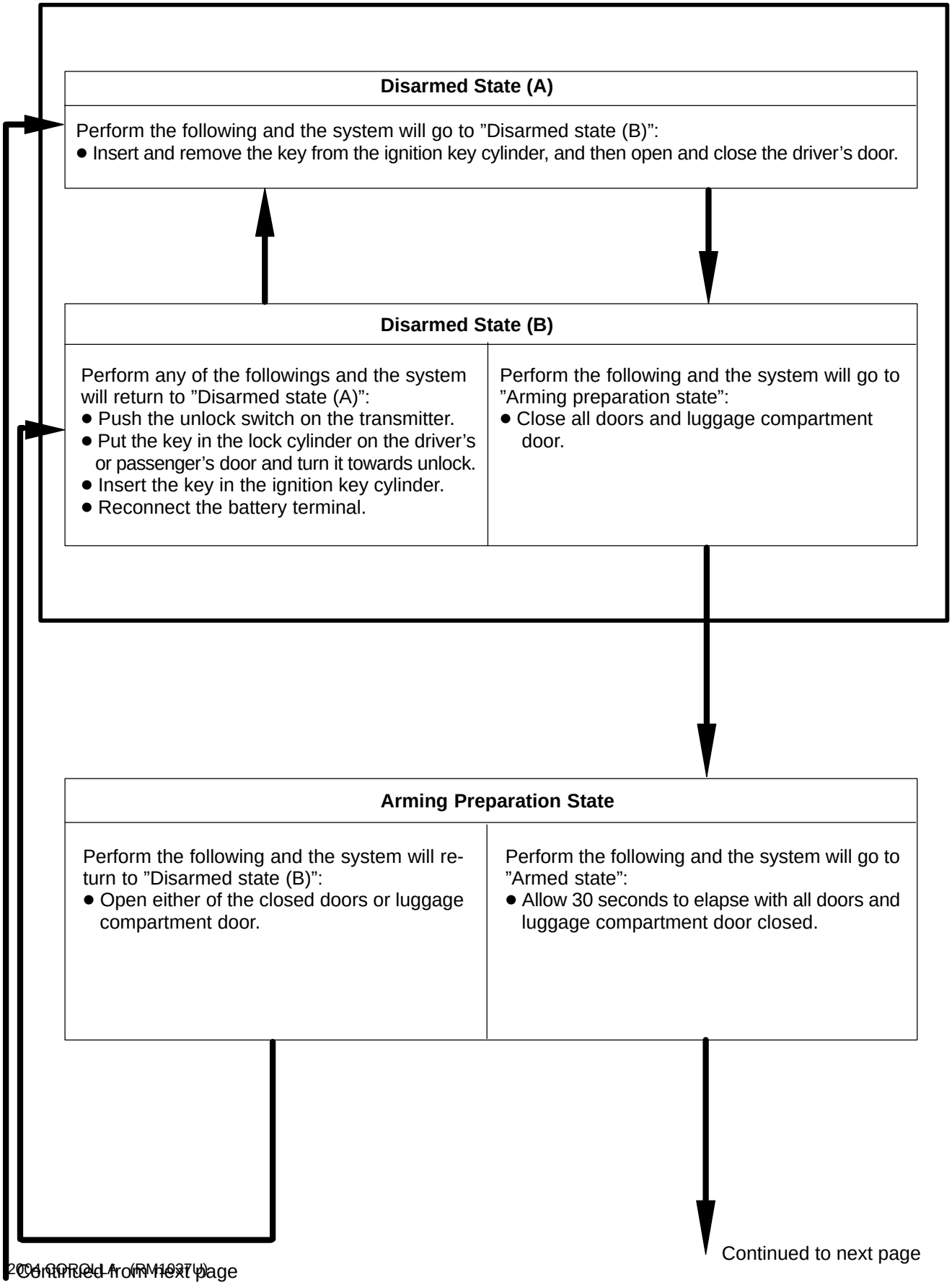
Blinking frequency:

0.2 seconds (ON)

1.8 seconds (OFF)

3. PASSIVE ARMING MODE

- This mode can be switched according to the specified method (See step 4).
- Initially set mode (when shipped from factory) is the active mode (No passive mode).



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Armed State	
Perform any of the followings and the system will return to ”Disarmed state (A)”: ● Push the unlock switch on the transmitter. ● Put the key in the lock cylinder on the driver’s or passenger’s door and turn it towards unlock. ● Insert the key into the ignition key cylinder and turn the ignition ON.	Perform any of the followings and the system will go to ”Alarm sounding state”: ● Open either of the closed doors and allow the entry delay time*1 to pass. ● Open the closed luggage compartment door. ● Reconnect the battery terminal. ● Turn the ignition ON without using the key. *1: See the ”Entry delay function” on the next page

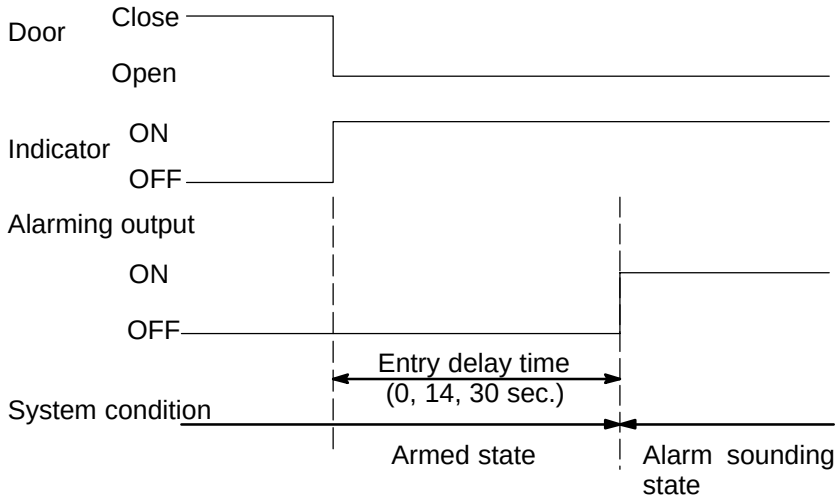
Alarm Sounding State	
Perform any of the followings and the system will return to ”Disarmed state (A)”: ● Push the unlock switch on the transmitter. ● Put the key in the lock cylinder on the driver’s or passenger’s door and turn it towards unlock. ● Insert the key into the ignition key cylinder and turn the ignition ON.	Perform the following and the system will return to ”Armed state”: ● The alarm sounding time (60 sec.) has elapsed.

Entry delay function:

HINT:

In the armed state, if either closed door is opened, entry delay time will start.

If the transferring condition (Armed state → Disarmed state) is satisfied during this entry delay time, the system will transfer to the disarmed state. However if the condition is not satisfied, the system will judge it to be a theft, and then the system will transfer to the alarm sounding state.



HINT:

The entry delay time can be selected among 0, 14, 30 seconds by the customizing function.

Indicator light output:

Condition	Indicator light
Disarmed state	OFF
Arming preparation state	ON
Armed state (Entry delay time)	BLINK (ON)
Alarm sounding state	ON

HINT:

Blinking frequency:

0.2 seconds (ON)

1.8 seconds (OFF)

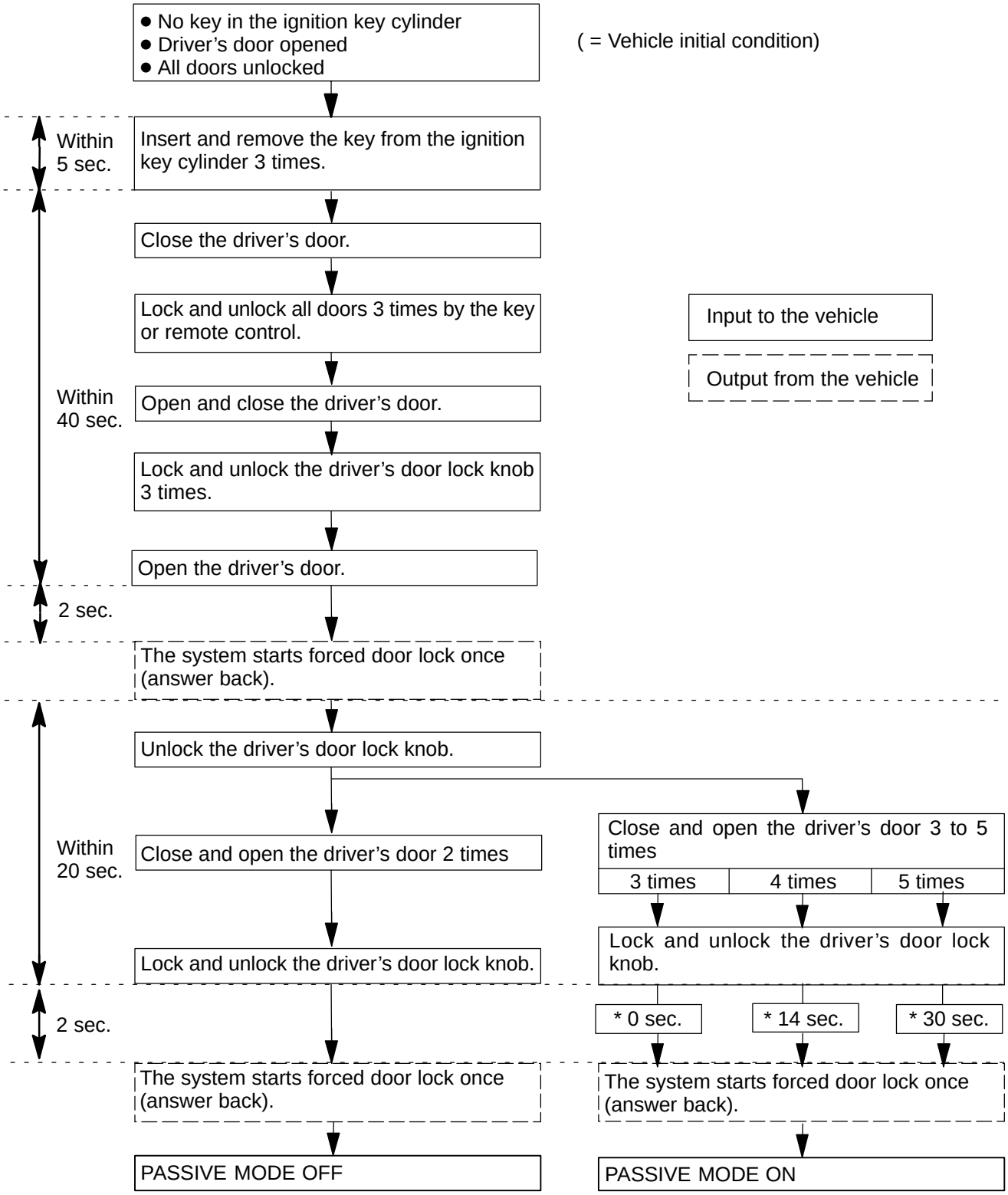
Transfer to the active mode:

HINT:

In each state of the passive mode, when the transferring condition to the active mode (disarmed state of active mode → arming preparation state of active mode) is satisfied, the system will transfer to each state of the active mode. In this case, the active mode will continue until the system transfers to the disarmed state.

State of Passive Mode Before Transfer	State of Active Mode After Transfer
Disarmed state	Arming preparation state
Arming preparation state	Arming preparation state (continuing for 30 sec.)
Armed state (During entry delay time)	Armed state (After alarming time has elapsed, the system will transfer to the armed state)
Alarm sounding state	After alarming time has elapsed, the system will transfer to the armed state

4. CHANGING METHOD OF PASSIVE MODE (ON or OFF)



HINT:

- Initial mode is PASSIVE MODE OFF.
- If there is a different signal in the middle of changing, it is invalid.

*: Entry delay time

5. FORCED DOOR LOCK CONTROL

(a) Forced door lock is a control that prevents intrusion into vehicles. When a door is unlocked (when an alarm starts), instantaneously forced door lock will be executed.

(1) Condition to execute forced door lock:

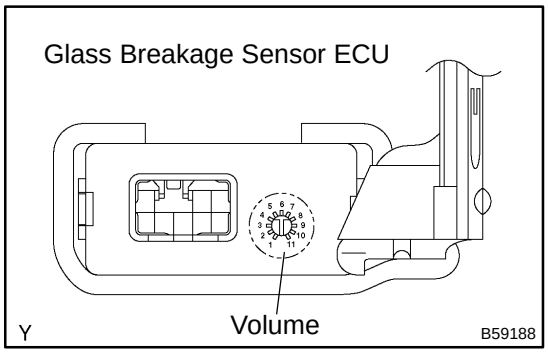
Detecting any or all of the following conditions activates forced door lock.

- Theft deterrent system is in the alarm sounding state of the active mode.
- No key is in the ignition key cylinder.
- Any of the front doors is unlocked.
- Since the previous forced door lock, 0.38 seconds or more have elapsed.

(2) Conditions to stop forced door lock:

Detecting any of the following conditions stops forced door lock.

- All doors are locked.
- The alarm has finished.
- The key is inserted into the key cylinder.



6. OPERATE GLASS BREAKAGE SENSOR

(a) If the glass breakage sensor detects the glass is broken (at 1st time), the sensor will issue an alarm for 20 seconds (pre–alarming). If the glass breakage sensor detects the glass is broken further more (at 2nd time), the sensor will issue an alarm for 60 seconds.

(b) The sensitivity of the glass breakage sensor can be adjusted by the volume switch in the glass breakage sensor ECU.

HINT:

Because the glass breakage sensor has a high sensitivity, it might issue a wrong alarm if it is adjusted in the volume of high sensitive.